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REMARKS

The Office Action dated August 16, 2006 has been reviewed. Reconsideration of the grounds of rejection of claims 67-70 is respectfully requested in view of the remarks herein. Applicant respectfully submits that pending claims 67-70 are allowable over the prior art.

SUMMARY OF THE OFFICE ACTION

Claims 67 and 70 stand rejected under 35 U.S.C. § 103(a) over Tomioka et al (US 5,510,109) in view of Yahya et al (US 5,217,626) and further in view of Choi (Bulletin of the Korean Fisheries Society) and Kobayashi et al (US 4,909,986). Claim 68 stands rejected under 35 U.S.C. § 103(a) over Tomioka et al (US 5,510,109) in view of Yahya et al (US 5,217,626) and further in view of Choi (Bulletin of the Korean Fisheries Society). Claim 69 stands rejected under 35 U.S.C. § 103(a) over Tomioka et al (US 5,510,109) in view of Yahya et al (US 5,217,626) and further in view of Kobayashi et al (US 4,909,986).

RESPONSE

For the reasons set forth below, applicant asserts that:

A. The Office has failed to establish a *prima facie* case of obviousness because at least 1) no motivation exists to combine the cited references, 2) the cited references teach away from the claimed invention, 3) the combination of the cited references do not result in the claimed invention, and 4) the Office relies on hindsight; and

B. Assuming solely for the sake of argument that the combination of references results in the claimed invention, applicant has rebutted any *prima facie* case of obviousness by comprehensive data provided in the application itself.

A. The Office has failed to establish a *prima facie* case of obviousness.

1. The cited references do not provide motivation to use silver and copper at the claimed concentrations.

Claims 67-70 of present application claim copper and silver concentrations of no more than 0.75 milligrams of copper and 0.0375 milligrams of silver per liter of the fluid. In the rejection, the Office

asserts that Yahya teaches the use of silver and copper at the claimed concentrations and thus allegedly renders the claimed invention obvious when combined with one or more of Tomioka and/or Choi and/or Kobayashi. However, Yahya provides no suggestion, teaching or motivation that would lead a person of ordinary skill in the art to combine the relevant art teachings in the manner claimed as detailed below.

In Yahya, Figure 1 clearly demonstrates that the use of a combination of silver and copper at the claimed concentrations is ineffective by itself as a disinfectant. The desired antibacterial and antifungal properties only result when the silver and copper are combined with potassium permanganate. Yahya describes this effect as synergistic, and thus one of skill in the art understands that the only real value is in the combination of these three components. *See* col. 3 lines 44-51. To use the combination of silver and copper alone as a disinfectant would destroy the intent of the composition of Yahya, which focuses on the synergistic effect of combining the silver and copper with the potassium permanganate. Thus, Yahya provides no suggestion, teaching or motivation to use any concentrations of silver and copper in combination with any other constituent in a disinfectant solution in the absence of potassium permanganate.

Further, Yahya's use of silver and copper in combination with potassium permanganate teaches away from the present invention. The data in Figure 1 demonstrates that a combination of silver and copper at the claimed concentrations is ineffective as a disinfectant unless combined with potassium permanganate. Even if one skilled in the art wanted to substitute another component for the potassium permanganate in the composition of Yahya, *at best* the data in Figure 1 directs one to use a component with properties similar to potassium permanganate in order to achieve the same synergistic effect. Because potassium permanganate is an oxidant, Yahya clearly directs one to use only oxidants. Yahya therefore teaches away from using the claimed compositions of silver and copper in combination with anything other than an oxidant and the disclosure of Yahya factually discredits and discourages the solution claimed by applicant.

Accordingly, since the present inventive composition combines silver and copper with non-oxidizing components and yet obtains an antimicrobial effect, the present invention is not obvious in view

of Yahya in combination with Tomioka and/or Choi and/or Kobayashi. Accordingly, applicant respectfully requests withdrawal of the rejection.

The Office's reliance on Yahya results in an improper "obvious to try" rejection. "Obvious to try" rejections arise where an inventor would have to vary the parameters of the prior art disclosure or try each of numerous possible choices until one possibly arrived at a successful result, where the prior art gave either no indication of which parameters were critical or no direction as to which of many possible choices is likely to be successful. *See MPEP 2145, citing In re O'Farrell*, 853 F.2d 894, 903, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988). Yahya discloses that the combination of silver, copper, and potassium permanganate has disinfectant properties. Yahya does not teach or suggest that the combination of silver and copper alone or combined with anything other than potassium permanganate would also have disinfectant properties. To say that it would have been obvious to use the claimed concentration of silver and copper in combination with something other than potassium permanganate, without showing any motivation or suggestion to do so, is a rejection based on an improper standard under 35 U.S.C. § 103. *See MPEP 2145.*

Here, the Office, within the framework of § 103, impermissibly picks and chooses from Yahya only so much of it as will support a given position, to the exclusion of other parts necessary to the full appreciation of what such reference fairly suggests to one of ordinary skill in the art. *See, e.g., In re Wesslau*, 353 F.2d 238 (CCPA 1965). Specifically, the Office Action fails to take into consideration the overall teachings of Yahya by reducing the reference teachings to its "gist," and by not taking into consideration what Yahya teaches and suggests to one of ordinary skill in the art about how to actually achieve the general embodiments described therein.

As in *In re Wright*, 866 F.2d 422 (Fed. Cir. 1989), the Office's attempt to show a suggestion of the claimed invention requires taking statements wholly out of context and giving them meanings they would not have had to one skilled in the art having no knowledge of applicant's invention, or for that matter to anyone else who can read the specification with understanding.

Based on the above, it is clear that the inventor of the present invention showed insight that was contrary to the expectations of the art, which is itself indicia of unobviousness. See, e.g., MPEP 2145(X)(D) and *In re Hedges*, 783 F.2d 1038, 228 USPQ 685 (Fed. Cir. 1986). Since Yahya provides no motivation to use the claimed concentrations of silver and copper in the absence of potassium permanganate, the applicant submits that claims 67-70 are not obvious in view of the cited reference much less the cited reference in combination with Tomioka and/or Choi and/or Kobayashi. Accordingly, applicant respectfully requests withdrawal of the rejection.

2. The cited references teach away from the claimed invention of claims 67, 69, and 70.

According to the Office Action, Tomioka et al. teach a fluid, copper metal dissolved in the fluid, silver metal dissolved in the fluid, alcohol dissolved in the fluid, and plant extract dissolved in the fluid. The concentration of copper and silver are allegedly derived from the Yahya reference.

Claims 67, 69, and 70 of the present application recite 220 milligrams of glycerin dissolved per liter of the fluid. The Office admits at page 3 line 4 of the Office Action that Tomioka does not recite glycerin, however the Office then argues that it would have been obvious to use glycerin as the alcohol in Tomioka, as claimed in claims 67, 69, and 70 of the present application, in view of the teaching of Kobayashi. In support of its position, the Office cites col. 5 lines 59-62 of Tomioka, which reads, "To obtain the first antibacterial and antifungal composition of this invention, an aqueous or an alcohol solution of the antibacterial and antifungal material is mixed with the carrier particles, then dried promptly."

Applicant submits that a mere statement that modifications of the prior art to meet the claimed invention would have been "well within the ordinary skill of the art at the time the claimed invention was made" because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references. *Ex parte Levingood*, 28 USPQ2d 1300 (Bd. Pat. App. & Inter. 1993). Here, because the teachings of Tomioka teach away from using glycerin, one of skill in

the art would understand that glycerin is an unacceptable choice to substitute for the alcohol dissolved in the fluid and thus the claimed invention is unobvious over the prior art.

Here, the Office's own citation shows why glycerin is unacceptable in Tomioka. Specifically, Tomioka requires prompt drying of the alcohol in order to cause the antifungal and antibacterial material to be carried on the carrier particles. *See* col. 5 lines 62-63. However, as one skilled in the art understands, glycerin is a known humectant. *See* MSDS for glycerin, a copy of which is provided herewith. The properties of glycerin therefore make it an inappropriate choice for use in the composition of Tomioka, since it could not be promptly dried as required by the reference in order to deposit the antifungal and antibacterial materials on the carriers. Therefore, the disclosure of Tomioka factually discredits and discourages the solution claimed by applicant.

Moreover, glycerin would destroy the intended function of the alcohol required in Tomioka. Tomioka requires prompt drying by the rapid evaporation of an alcohol in order to deposit the antifungal and antibacterial material on the carriers. Since glycerin is a humectant, the use of glycerin would not allow the antifungal and antibacterial to be deposited on the carriers and the intended function of the alcohol would be destroyed. Therefore, the applicant submits that Tomioka teaches away from using glycerin, and claims 67, 69, and 70 are not obvious in view of Tomioka, much less Tomioka in view of Choi and Kobayashi.

**3. The combination of the cited references does not result in the claimed invention.**

Applicant asserts that it is well established that the prior art reference (or references when combined) must teach or suggest all the claim limitations, *see, e.g.*, MPEP § 2142. In this case, even if the references are combined in the manner suggested, the combination of the references does not disclose each and every limitation of claims 67, 69, and 70.

Claims 67, 69, and 70 of the present application claim 220 milligrams of glycerin dissolved per liter of the fluid. However, Tomioka teaches the use of alcohol as a solvent that is evaporated and not as a component dissolved in a fluid solvent. Therefore, even if glycerin is an alcohol in the context of Tomioka, the combination of the references would not result in the claimed invention because the

glycerin of the claimed invention is itself dissolved in a fluid, and the fluid is required by the claims. Accordingly, because the references fail to provide each and every claim limitation, applicant submits that the rejections of claims 67, 69, and 70 have been overcome.

**4. The Office has fallen into the hindsight trap**

As the court noted in *In re Kahn*, 441 F.3d 977 (Fed. Cir. 2006) “[d]efining the problem in terms of its solution reveals improper hindsight in the selection of the prior art relevant to obviousness” (quoting *Monarch Knitting Mach. Corp. v. Sulzer Morat GmbH*, 139 F.3d 877, 881 (Fed. Cir. 1998)).

Applicant respectfully submits that “our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references.” *Dembiczak*, 175 F.3d at 999. This is because “[c]ombining prior art references without evidence of such a suggestion, teaching, or motivation simply takes the inventor’s disclosure as a blueprint for piecing together the prior art to defeat patentability- the essence of hindsight.” *Id.*

Although the MPEP at § 2145 indicates that “[a]ny judgement on obviousness is in a sense necessarily a reconstruction based on hindsight reasoning,” here it is clear that the Office has once again engaged in *impermissible* hindsight. This is because in the absence of applicant’s disclosure, a person of ordinary skill in the art would have had no motivation to combine the prior art teachings, much less have had motivation to combine the prior art teachings in the particular manner claimed for all the reasons described hereinabove. Here, the motivation to combine does not come from any of the references, but rather from the Office alone.

**B. The applicant has rebutted any *prima facie* case of obviousness.**

Even assuming for the sake of argument that the Office has established a *prima facie* case of obviousness, applicant has rebutted such showings. As the Office is aware, an obviousness rejection may be overcome by evidence being given of the applicant’s invention’s superiority of a property shared with the prior art. MPEP § 716.02(a).

Applicant has provided throughout the application (see, e.g. p. 18 line 29 – p. 19 line 3) comprehensive data of his experimentation of the invention. Collectively, this evidence is more than sufficient "[e]vidence of unobvious or unexpected advantageous properties, such as superiority in a property the claimed compound shares with the prior art, [which] can rebut *prima facie* obviousness. 'Evidence that a compound is unexpectedly superior in one of a spectrum of common properties . . . can be enough to rebut a *prima facie* case of obviousness.'" *In re Chupp*, 816 F.2d 643, 646, 2 USPQ2d 1437, 1439 (Fed. Cir. 1987).

Despite the fact that there are "[n]o set number of examples of superiority . . . required" *In re Chupp*, 816 F.2d 646, 2 USPQ2d 1439 (Evidence showing that the claimed herbicidal compound was more effective than the closest prior art compound in controlling quackgrass and yellow nutsedge weeds in corn and soybean crops was sufficient to overcome the rejection under 35 U.S.C. § 103, even though the specification indicated the claimed compound was an average performer on crops other than corn and soybean), the applicant has cited examples in hard data from laboratory experiments. *See also Ex parte A*, 17 USPQ2d 1716 (Bd. Pat. App. & Inter. 1990) (unexpected superior therapeutic activity of claimed compound against anaerobic bacteria was sufficient to rebut *prima facie* obviousness even though there was no evidence that the compound was effective against all bacteria). Accordingly, applicant respectfully requests withdrawal of the rejection of claims 67-70.

CONCLUSION

Applicant respectfully submits that the rejections of the claims under 35 U.S.C. § 103(a) have been addressed. Reconsideration and allowance of these claims is respectfully requested at the earliest possible date.

Respectfully submitted,

12/18/06

Date

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# Safety (MSDS) data for glycerol

Click here for data on glycerol in student-friendly format, from the HSci project

Glossary of terms on this data sheet.

## General

Synonyms: glycerin, glycerol USP, glycerine, 1,2,3-propanetriol, propanetriol, 1,2,3-trihydroxypropane, bulbold, citifluor AF 2, cristal, emergy 916, glyrol, glycerol ophthalgan, glyciterol, glycyl alcohol, osmoglyn, pricerine 9091

Use: Widely used as a food additive (emulsifier, thickener, stabilizer), cosmetic agent, lubricating agent, antifreeze etc.

Molecular formula:  $C_3H_8O_3$  [structural:



CAS No: 56-81-5

EC No: 200-289-5

## Physical data

Appearance: viscous colourless or pale yellow liquid

Melting point: 17.8 C

Boiling point: 290 C

Vapour density: 3.17 g/l

Vapour pressure: < 1mm Hg at 20 C

Specific gravity: 1.261

Flash point: 160 C (closed cup)  
Explosion limits: lower 0.9%  
Autoignition temperature: 370 C  
Critical temperature: 492.2 C  
Critical pressure: 42.5 atm

## Stability

Stable. Incompatible with perchloric acid, lead oxide, acetic anhydride, nitrobenzene, chlorine, peroxides, strong acids, strong bases. Combustible.

## Toxicology

Mist is a respiratory irritant at high concentrations. Repeated contact may cause dehydration of skin. Typical TLV 10 mg/m<sup>3</sup> (nuisance). Not hazardous according to directive 67/548/EC.

### Toxicity data

(The meaning of any abbreviations which appear in this section is given here.)

IPR-RAT LD<sub>50</sub> 8700 mg kg<sup>-1</sup>

ORL-RAT LD<sub>50</sub> 12600 mg kg<sup>-1</sup>

SCU-RAT LD<sub>50</sub> 100 mg kg<sup>-1</sup>

ORL-MUS LD<sub>50</sub> 8700 mg kg<sup>-1</sup>

### Risk phrases

(The meaning of any risk phrases which appear in this section is given here.)

## Personal protection

Minimize contact.

### **Safety phrases**

(The meaning of any safety phrases which appear in this section is given here.)

S26 S36.

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